Sustainable Energy Advantage, LLC

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June 15, 2007

The Honorable John D. Dingell, Chairman
U.S. House of Representatives Committee on Energy & Commerce
Washington, D.C. 20515-6115

The Honorable Rick Boucher, Chairman
U.S. House of Representatives Subcommittee on Energy & Air Quality
Washington, D.C. 20515-6115

Re: Response to Chairman's RPS Letter of May 24, 2007

Dear Chairmen Dingell and Boucher:

Thank you for the opportunity to respond to your questions regarding proposed "portfolio standards." These comments are derived from policy analysis that we have undertaken with funding from The Energy Foundation regarding the interaction between renewable energy markets and policies, and emission cap-and-trade regulation. We provide as an attachment a PowerPoint adapted from a presentation on the topic made earlier this month at the American Wind Energy Association's Windpower 2007 conference in Los Angeles. The intention here is to provide you and your colleagues with a financially disinterested policy perspective that will result in the most rational integration of renewable portfolio standards (RPS) and a greenhouse gas (GHG) cap-and-trade regime.

Our responses, attached, are confined to those questions that focus on the interaction of those two policies. *Note: This work was supported by the Energy Foundation; the content of this response represents the opinion and position of the authors and should not be construed to reflect the official position of The Energy Foundation.*

Thank you for considering our input.

Sincerely,

Robert C. Grace

Sustainable Energy Advantage, LLC

Thomas H. Rawls

THR Associates, LLC

Cc: David Wooley, Vice President for Domestic Operations, The Energy Foundation

1.c. If you favor such a policy [portfolio standard], how would you define its specific purpose?

In the absence of a GHG cap-and-trade program, electricity generated by renewable energy resources displaces fossil fuel use and thereby reduces GHG emissions. This fundamental physical characteristic of our integrated electricity system must inform your policymaking.

An RPS can have a range of purposes, but because renewable generation currently reduces GHG and other emissions, the broad expectation is that one purpose of an RPS would be to produce emission benefits (ranging from improving air quality to reducing greenhouse gases).

It is critical that policy design reflect a policy's purposes. And the introduction of cap-and-trade regulations can confound RPS stated or presumed purpose of emission reduction. Policy makers must preserve the emission benefits of renewable energy.

A portfolio standard can have multiple purposes, including support of newer generating technologies; greater diversity of energy resources and reduced price volatility; support for domestic energy sources thereby increasing our energy independence and advancing national security; promotion of rural economic development; increased reliance on sustainable non-fossil resources, and support for generating resources that require neither a substantial amount of water (an important consideration in some regions of the country) nor long-term storage of highly toxic substances.

As noted previously, the reduction of GHG and harmful criteria pollutants can also be a stated and central purpose of a portfolio standard. We observe that some state RPS policies explicitly have such a stated purpose, others explicitly do not, while many remain ambiguous in their stated policy objectives, confounding effective design and implementation.

Nonetheless, based on a general review of the manner in which renewable resources are promoted, discussed, and valued, it is clear that many people

expect renewable energy resources to help reduce air pollution and think of renewable resources as an important tool to address GHG. And many, if not most, policymakers make public statements linking the development of renewable resources and implementation of renewable energy policies such as RPS with reduced emissions.

IF policymakers choose to define the reduction of GHG emissions as a purpose of the RPS, then our analysis of the issues suggests that to achieve the desired results, (1) the RPS policy be designed in anticipation of potential GHG regulations and their potential impact on the benefits provided by zero- or low-emission renewable energy sources; and (2) the GHG laws and regulations specifically relate to and align with the RPS purposes. If you determine that the purpose of the portfolio standard is not specifically to address GHG emissions, then the design of any GHG regimes need not take renewable portfolio standard requirements and targets into consideration.

The relationship of a RPS and GHG regimen is often overlooked, confused or finessed. A failure to establish a clear interaction between the two leads to confusion about the benefits of those resources included in the portfolio standard. This confusion can actually work to the detriment of the development of the very resources the portfolio standard was established to promote, by negating the displacement of GHG emissions and thereby the ability of a renewable energy generator to create and claim the air emission benefits. Such a failure is already today, in anticipation of future GHG regimes, leading to widespread confusion in negotiating contracts for those resources. These are critical points that must not be overlooked.

1.d. If Congress were to adopt an economy-wide policy mandating reductions in emissions of greenhouse gases, including the electricity industry, would such a portfolio standard policy remain necessary or advisable?

As stated in 1c, there are many reasons to adopt an RPS, only some of which have to do with the reduction of harmful emissions. An RPS and a program to

reduce GHG are not substitutes for each other. Many important RPS benefits will not be accomplished by a cap-and-trade program.

7.a Should tradable credits for qualifying generation be utilized as the mechanism for establishing compliance?

Yes. Tradable credits are the current industry standard for compliance with state portfolio standards and for meeting information label (disclosure) requirements.

Tradable credits created and tracked by independent registries are widely recognized as the most effective means to avoid the double counting of (or unique claim to) a commodity which cannot otherwise be readily, uniquely counted. For this reason, tradable credits are the also the industry-standard commodity for renewable energy purchases in voluntary markets. Any deviation from the use of tradable credits would only sow confusion.

The industry standard is one tradable credit for every megaWatthour (MWh) of renewable generation. Tradable credits can be used only once.

7.e. What relationship, if any, should portfolio standard credits have to other State and Federal credit trading programs for SO_2, greenhouse gases, or biofuels.

Renewable energy technologies have zero or low emissions of GHG and other air emissions. Today, renewable energy generation displaces fossil-fuel-fired generation, and as a result emissions of GHG and other air pollutant emissions are reduced.

A GHG cap-and-trade program has the potential to unwind the stated and/or expected emission benefits of an RPS. It is essential, therefore, that the program designs of both RPS and GHG cap-and-trade programs be linked to their purposes. That is to say, renewable energy is a critical component in the emissions-reductions toolkit and any cap-and-trade program should ensure that

the emission-reductions benefits of renewable energy are formally recognized in the program.

Background:

Making sure that the portfolio standard and the GHG program establish the proper relationship is essential to ensuring that the full benefits of each program are realized. The two policies occupy different "regulatory spaces," and compliance is based on trading in different commodities, which appear deceptively similar.

Renewable energy markets, both those serving mandatory state portfolio standards and those serving voluntary "green power" sales, increasingly utilize tradable credits, usually called RECs, for documenting compliance and claims. A REC documents the generation of one MWh of generation from a particular renewable resource, and carries descriptive information regarding the characteristics of the generator, such as generation technology, vintage, actual emissions, location of the generator, or eligibility for a particular policy. RECs are "tracked," i.e. accounted for, in independent registries (often the responsibly of Independent System Operators or similar independent regional institutions) to accommodate state regulations related to energy sales.

In contrast, emissions policies—Acid Rain and NO_x, for example—are overseen by air-quality regulators in state and federal environmental agencies. The compliance device for these programs is a form of tradable emission right, with a variety of names including allowances, offsets or emissions reduction credits, which we will generically refer to as Tradable Emissions Commodities (TEC). The unit of measurement is weight (e.g. tons or pounds, not MWhs). TECs are tracked (or accounted for) in emissions registries. A REC and a TEC are distinct and separate instruments, and a REC does not include a TEC.

Over the past six months, we have conducted extensive analysis of the interaction between these policies and the related markets for renewable energy credits and tradable emission rights, with funding from The Energy Foundation. The Energy

Foundation is a partnership of major donors interested in solving the world's energy problems, whose mission is to advance energy efficiency and renewable energy — new technologies that are essential components of a clean energy future. We provide as an attachment to these comments a PowerPoint adapted from a presentation of our policy analysis results presented earlier this month at the American Wind Energy Association's Windpower 2007 conference in Los Angeles. We make reference to this attachment in the remainder of our comments.

Our research, summarized in the attachment, highlights that the relationship between RPS policies and the compliance and voluntary markets for RECs, on the one hand, and emission cap-and-trade policies, with their associated markets for TECs on the other hand, has not been well coordinated to date. In fact, we have identified at least five distinct approaches for the interaction currently in practice or envisioned in proposed rules (see slides 9 through 15).

RPS Policies and Emissions Reductions:

As noted earlier, RPS policies can either be established for emission reduction purposes (in addition to other purposes), or exclude emission reduction as a purpose, leaving that task to emission cap-and-trade policies. Either approach is reasonable. As noted earlier, however, public expectations and statements made by policymakers regarding renewable energy generation and policy often highlight the emission-reduction benefits of renewable energy, so the broad-based expectation is that an RPS would at least in part be emission reduction policy.

Treatment of RPS and Green Power Under GHG Policies:

Likewise, if each policy is to have its desired effect, cap-and-trade policies must be crafted so as to address and work with the stated/expected disposition of RECs for both RPS compliance and voluntary "green power" purchases. As discussed in the attachment, cap-and-trade programs can, if they do not properly recognize

renewable energy, unwind or negate the benefits of an RPS adopted for emission reductions as well as voluntary purchases.

The treatment of zero-emission renewable energy generation under the Federal Acid Rain provisions relating to sulfur dioxide (SO_2) emissions provides an illustration of how such programs may not interact optimally. Under the Federal Acid Rain program, renewable generators are not allocated (SO_2) allowances. Only the retirement of an unused allowance will reduce SO_2emissions below the regulatory cap. As a result, renewable energy generation does not directly reduce sulfur emissions. Instead, injection of zero- SO_2 generation from renewable energy generators into the electricity system displaces fossil-fueled generation elsewhere in the system, freeing other parties from the need to reduce their SO_2emissions by other means. Increased clean generation has the effect of reducing overall demand for allowances and thereby moderating allowance prices, but will not (in the near-term) reduce emissions.[1]As described in more detail in the attached presentation, if a Federal GHG cap-and-trade program follows the model of the Federal Acid Rain program, renewable energy will not receive TECs under the program. Neither will the introduction of renewable energy reduce the cap or reduce the number of allowances available in the marketplace. Instead, the emissions-reduction benefits or renewable energy will not be formally recognized by the programs. The generation of renewable energy will go from being an effective means of reducing GHG emissions to having almost no role in addressing GHG emissions**.**

We observe that the support for renewable energy generation among both the general public and policy makers stems in large part from renewable energy's emission-free (or low-emission) characteristics. In fact, opponents of certain renewable energy facilities have cited the lack of formal recognition of renewable energy in air-quality programs as undercutting the rationale for the new

[1] As noted in the attachment, the state role in regulating emissions of NO_x has followed a patchwork of different treatments, where some states have begun to recognize the need to integrate renewable energy and air quality policies, through limited so-called "set-asides" rather than in a fully-integrated manner.

renewable projects. Policy makers must understand how policy design plays out in a broader context. **It makes no sense to exclude low- and zero-emitting resources from being a tool in air-quality programs**.

Slide 16 of the attached presentation depicts a framework for understanding how to design a cap-and-trade program to accommodate RPS policies, for both situations where the RPS goal is to reduce emissions, and for situations where an RPS is not deemed a GHG reduction policy.[2] Summarizing here for the case in which RPS is expected to reduce emissions, the rational policy relationship between a RPS and a GHG cap-and-trade system would be either:

1) The reductions in emissions that will result from additional renewable energy generators being added in compliance with the RPS can be modeled, and the anticipated reductions can then be accounted for when setting the GHG emissions cap. Under this scenario, the emissions benefits of renewable energy are recognized in the modeling and setting of the cap, and the cap (and therefore the number of allowances distributed each year) is lower than it otherwise would be if there were no expectations of new renewable generation being developed. Under this approach RPS compliance is an essential element in meeting GHG targets. The benefits of renewable energy generation are built-in to the cap

2) If the reduction in emissions that will result from the RPS are not modeled and included when setting the cap, eligible generation used to meet the portfolio standard should be allocated GHG TECS, which would be retired in the proper ratio. In this way, the resources developed to meet the portfolio standard would actually reduce total allowable GHG emissions.

In addition to purchases of RECs for purposes of RPS compliance, it is equally important to consider the interaction between cap-and-trade policies and

[2] In the situation where the RPS is explicitly not deemed a GHG reduction policy, allocation of TECs to renewable energy generators either to sell or retire as they wish is an mechanism that assures renewables continue to receive recognition and value for the emission benefits they create.

voluntary purchases of renewable energy. In addition to the renewable-energy market mandated by state portfolio standards, there exists a robust and rapidly growing voluntary market for purchases of renewable energy (usually purchased as RECs). Many of these transactions are based on the incontrovertible fact that today, in the absence of a GHG cap-and-trade regime, incremental renewable energy added to the grid displaces fossil-fuel generation and therefore emissions. As a result, such purchases are an effective way for a company (or individual) to reduce their GHG "footprint" and address climate change. Industry analysts estimate that this rapidly growing voluntary market for "green power" supports 22% of the new renewable generation added in recent years.[3] The U.S. Environmental Protection Agency (among many others) has promoted the purchase of RECs. Many large businesses, institutions, and governments have been encouraged to show leadership in the fight against climate change and told that buying RECs would be an effective measure.

If cap-and-trade policies are not designed to formally recognize renewable energy's contribution to emission reduction, then a number of institutional purchasers of renewable energy, including the federal government, may find that their purchases don't do what they were told they would do. It would be unfortunate if GHG policy were to proceed in a way that would undermine a recognized and blossoming voluntary effort to support renewable resources.

Slide 17 in the attachment depicts the alternatives for maintaining the expected benefits of, and the very integrity of, these "green power" purchases. The desired benefits can be accomplished by either reducing the cap in proportion to actual purchases of incremental renewable energy, or allocating TECs and automatically retiring them based on the volume of actual green power purchases. This latter approach has been proposed in the development of the Northeast Regional Greenhouse Gas Initiative (RGGI) model rule.

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[3] Bird, L. and B. Swezey, 2006. Green Power Marketing in the United States: A Status Report (Ninth Edition), NREL/TP-620-40904. Golden, CO: National Renewable Energy Laboratory, November.

In conclusion, we emphasize the following key points:

First, electricity generated by renewable energy resources displaces fossil fuel use and thereby reduces GHG emissions. This fundamental physical characteristic of our integrated electricity system must inform your policymaking.

Second, the almost universal expectation is that new renewable resources—those that would be included under a portfolio standard—will help reduce GHG emissions.

Third, if renewable energy's air-quality benefits are not formally recognized and are thereby excluded from the GHG "tool kit," policymakers create a confusing and problematic disconnect, which could have the perverse effects of negating the benefits of incremental renewable energy additions while undermining support for desirable portfolio resources.

Thank you for this opportunity to offer our understanding the important and necessary interactions of the policies supporting both renewable portfolio standards and GHG emissions.

Attachment A:

Untangling the Interaction between Renewable Energy Markets/Policies and Emission Cap & Trade Regulation

Preserving the Emission Benefits of Renewable Energy

Bob Grace, Sustainable Energy Advantage, LLC

Tom Rawls, THR Associates, LLC

Adapted from presentation at AWEA Windpower 2007

June 3, 2007

Untangling the Interaction between Renewable Energy Markets/Policies and Emission Cap & Trade Regulation

Preserving the Emission Benefits of Renewable Energy

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Acknowledgements

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- Advisors:
  - Rob Harmon, Bonneville Environmental Foundation
  - David Wooley, The Energy Foundation

The content of this presentation represents the opinion and position of the authors and should not be construed to reflect the position of the funder

Executive Summary

- Renewable Portfolio Standard (RPS), Renewable Energy Credits (RECs), and emission Cap & Trade (C&T) programs are rapidly growing platforms widely perceived as a boon for wind energy. Analysis reveals, however, that their poorly coordinated interaction is widely misunderstood, leading to increased commercial uncertainty and implementation of policies which may not yield the results expected by policymakers.
- Cap & Trade programs may not recognize emission benefits of wind, potentially limiting wind's claims to greenhouse gas (GHG) or other emission reductions. The specifics of policy and market design dictate the mechanism through which wind may benefit financially from these policies, as well as the magnitude of those benefits.
- Using analysis of the current landscape, we present clear definitions and a framework for clearly articulating the relationships among RPS, REC and emissions markets in a meaningful and consistent way. This framework can address current constraints while:
  - Allowing policymakers to create policies and markets which yield their intended result;
  - Working with existing and conceived tracking systems;
  - Clarifying options for trading and contracting for wind energy "attributes" and their implications;
  - Making transparent the benefits of wind and other renewable energy resources as emission reducers, and thereby allowing wind to make the emission claims desired even in the presence of cap & trade programs.
- Using the framework presented, clear articulation of policy objectives is critical to effective implementation. The details matter!

- *Note: While this presentation references wind, it applies generally to any incremental zero-emission renewable energy source.*

A Tale of Two Worlds...

Will RE and C&T Policies & Markets Work Together?

Renewable Energy

RPS Requirements,

Voluntary Green Power (GP)

Currency: Tradable Renewable Energy Credits (RECs)

- Evidence of 1 MWh of generation
- Carry emission & other "direct" attributes

Tracking: REC registry

Emission Policies

'Cap & Trade' (C&T)

Is C&T indifferent to wind benefits?

➔Emissions benefit must be formally recognized, or wind unable to produce, claim or be compensated directly for benefits

Currency: 'Tradable Emission Commodities' (TECs)

- e.g. allowances, offsets, VERS...
- Created by regulation, recognize emission benefits

Tracking: Emission registry

Cap & Trade Programs *May* Not Recognize Wind's Benefits, Potentially Eliminating Wind's Ability to Cause & Claim Emission Reductions

***Without* Cap & Trade (C&T)**

➔wind displaces production, reducing emissions from marginal fossil fuel resources

➔valid emission reduction claim quantified by modeling…

***With* cap & trade policies**

➔ how do air quality benefits of RE get recognized & compensated?

Key Commercial Questions

- ✓ How does wind get recognized for producing emission-free generation?
- ✓ How does wind receive compensation for benefits created?
  - ✓ Sale of REC for RPS?
  - ✓ Sale of REC for RPS + sale of TEC?
  - ✓ Sale of REC for RPS + increase in market prices of energy?
- ✓ If wind's benefits not recognized, what do green power marketers have to sell? Why would customers buy?

Key Policy Questions

- ✓ Will Cap & Trade policies…
  - Remove wind from emissions-reduction toolbox?
  - Negate ability for wind to make emission reductions claims?
  - Kill the voluntary RE market?
- ✓ Is RPS an emission reduction tool?
  - If yes, how does it get integrated into GHG C&T rules?
- ✓ Will RE policies have their intended result?

Problem #1: "Generation-" or "Environmental-attributes" are Insufficiently Precise Terms

Two different categories of "attributes"

Primary Attributes (PA)	**Derived Attributes (DA)**
Characteristics of the unit	*Impacts or benefits to the system*
Unique (no more info needed)	**Need additional info**
Look at the generator ("Wind")	*Interaction* with the system, and/or policy to determine benefit
Actual emissions ("zero")	*Without C&T*: **Displaced** emissions estimated by dispatch study
Location, vintage, RPS Eligibility, etc.	*With C&T*: administratively determined
Tracked by REC tracking systems (a.k.a. Generation Info. Systems, GIS)	Not tracked by GIS

➔ *RECs cannot universally "include" derived attributes, which vary…*

- Presence or absence of C&T policy… differ among states, pollutants
- TECs not universally conveyed (e.g. exemptions, set-aside allowances)
- Where load is served determines what is displaced
- Usage by REC buyer (e.g. RPS vs. GP) not known at creation

➔ *Basic definition of a REC aligns with bundle of primary attributes*

- If TECs created, can attach to "basic" REC, e.g. for CA RPS compliance or GP sales

Problem #2:
Policy Conflicts & Uncertainty

- **Policies established without….**
  - Clear statements of objectives → e.g. Is purpose of RPS to reduce greenhouse gas (GHG) emissions?
  - Clear regulatory structure to accomplish the objective
- **Creates questions… e.g.,**
  - Does wind reduce emissions under RGGI or California GHG C&T?
- **Broad lack of consistency between and within states**
  - One agency or branch may not understand what others have done

Federal SO_2

- Wind gets no TECs
- No emission reductions can be claimed

NO_X (Clean Air Interstate Rule)

- Wind can seek limited TECs through set-asides, in some states (must apply)
- Emission reduction benefits depend on distribution & usage

Regional Greenhouse Gas Initiative (RGGI)

- Wind gets no TECs
- Projection of existing RPS compliance presumed in setting targets and quantity of allowances created
- *Optional* GP clause in model rule → TECs "set-aside", auto-retired for GP sales, enabling buyer to make "claim" (will states adopt?)
- Role of future RPS has not been addressed!

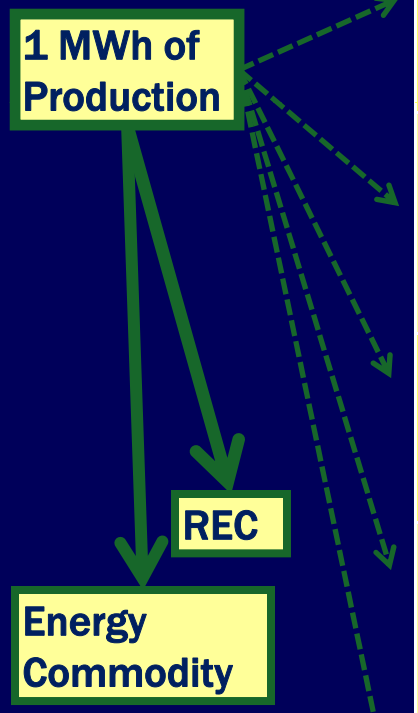
Problem #3:
Commercial Uncertainty

- With policy uncertainty, buyers & sellers both seek Derived Attributes
  - Confusion increasingly confounds contract negotiations between attribute buyers & sellers (what needed, how to document/verify?)
- Will TECs yield a supplemental revenue stream?
- For wind generator, is it beneficial to have a TEC if already have a market for RECs?
  - In efficient market, would value of REC would drop by value of TEC? Do those seeking both REC and TEC revenue streams win only through market inefficiencies?
  - Does support for RPS decline without GHG reductions as benefit?

Problem #4:
Can wind buyers claim emission reductions?

- GP buyers use RE to neutralize carbon footprint
  - Market is growing fast
  - Includes major businesses, federal and state governments
  - EPA promotes voluntary sales
  - States are using RE to meet GHG goals (e.g. CT)
- C&Ts must reduce the cap, or allocate & retire TECs as a result of 'green power' sale to produce a clear RE emission reduction, enable the "claim"
  - ➔ Will GHG policy undermine this market?
- Threat to RE siting
  - If RE does not reduce GHG, are communities less willing to accept perceived burdens of hosting wind?

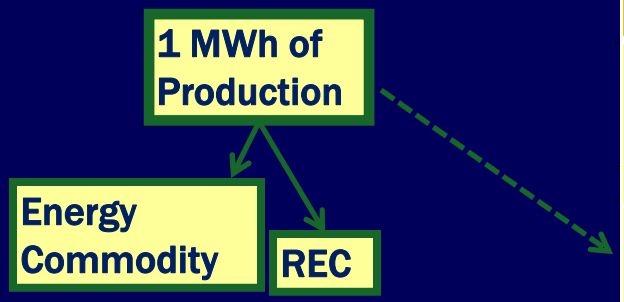
Today's Landscape: 5 distinct (and often conflicting) approaches in use today!



Approach
Before the advent of C&Ts
C&T, cap NOT reduced by wind
C&T, cap reduced by wind
Allows sale of TEC
TEC locked to REC

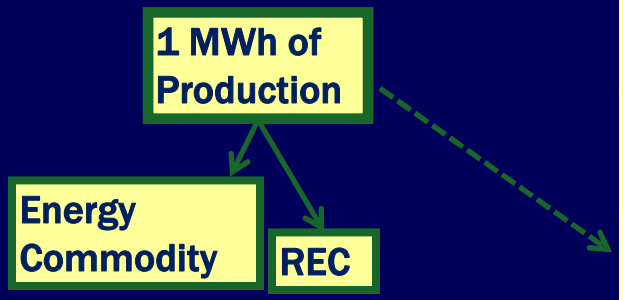
- Models in current use differ in treatment of Derived Attributes (or TECs if created), and include:
  - Before the advent of C&Ts
  - C&T, cap NOT reduced by wind
  - C&T, cap reduced by wind
  - Allows sale of Derived Attributes (or TECs if created)
  - TEC locked to REC

Approach: Before the Advent of C&Ts



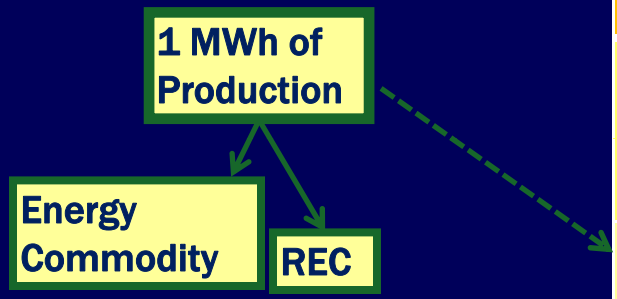
Approach	Before the Advent of C&Ts
Example	Most states
TECs Created?	No framework for treatment of Derived Attributes
How Wind Benefits	Single revenue stream for REC; GHG benefit implied with REC
What Wind Claims	Wind reduces emissions (displacement)

Approach: C&T, Cap NOT Reduced by Wind



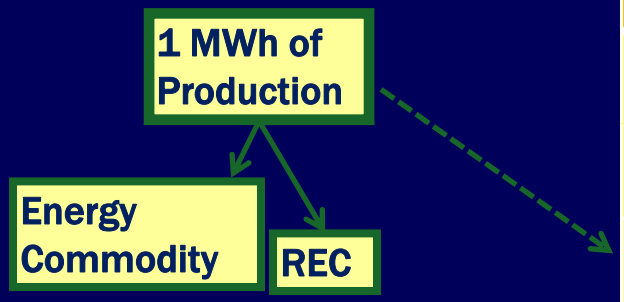
Approach	C&T, cap NOT reduced by wind
Example	Voluntary GP under RGGI unless optional GP clause adopted; Federal SO_2; NO_X w/o set-aside allowances
TECs Created?	No
How Wind Benefits	Value of wind production is higher due to increased energy prices (No direct C&T revenue)
What Wind Claims	No clear emission reduction claim; lower total compliance cost

Approach: C&T, Cap Reduced by Wind



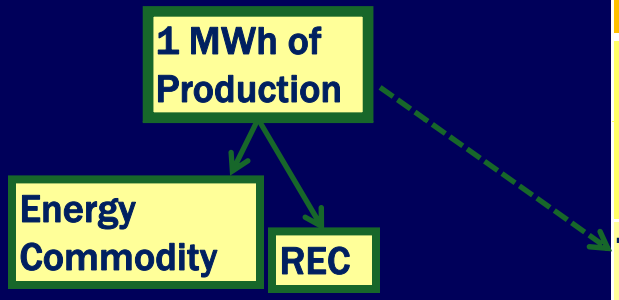
Approach	C&T, cap NOT reduced by wind
Example	RGGI treatment of pre-existing RPS targets (imprecise)
TECs Created?	Reduce the Cap or # of Allowances
How Wind Benefits	Higher value of wind production due to increased energy prices
What Wind Claims	Wind reduces emissions

Approach: Allows sale of Derived Attributes (or TECs if created)



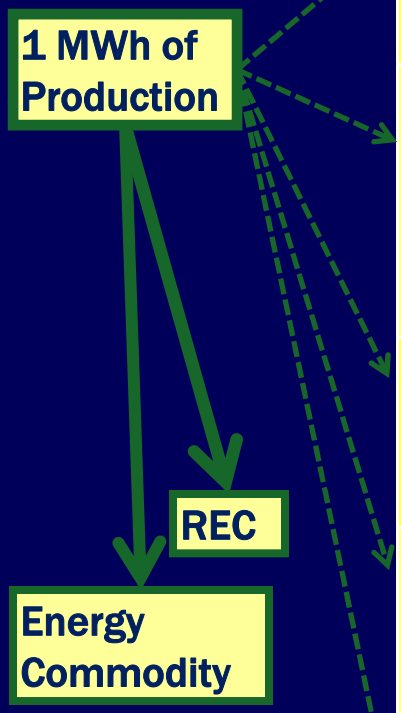
Approach	Allows sale of DA/TEC
Example	RPS in DE, MA, MD, PA, RI; Allowances allocated to wind (e.g. set-asides)
TECs Created?	TEC created, independent of REC
How Wind Benefits	C&T allowances to Wind. TEC sale yields additional revenue
What Wind Claims	Wind may not reduce emissions, but lowers total C&T compliance cost

Approach: TEC Locked to REC



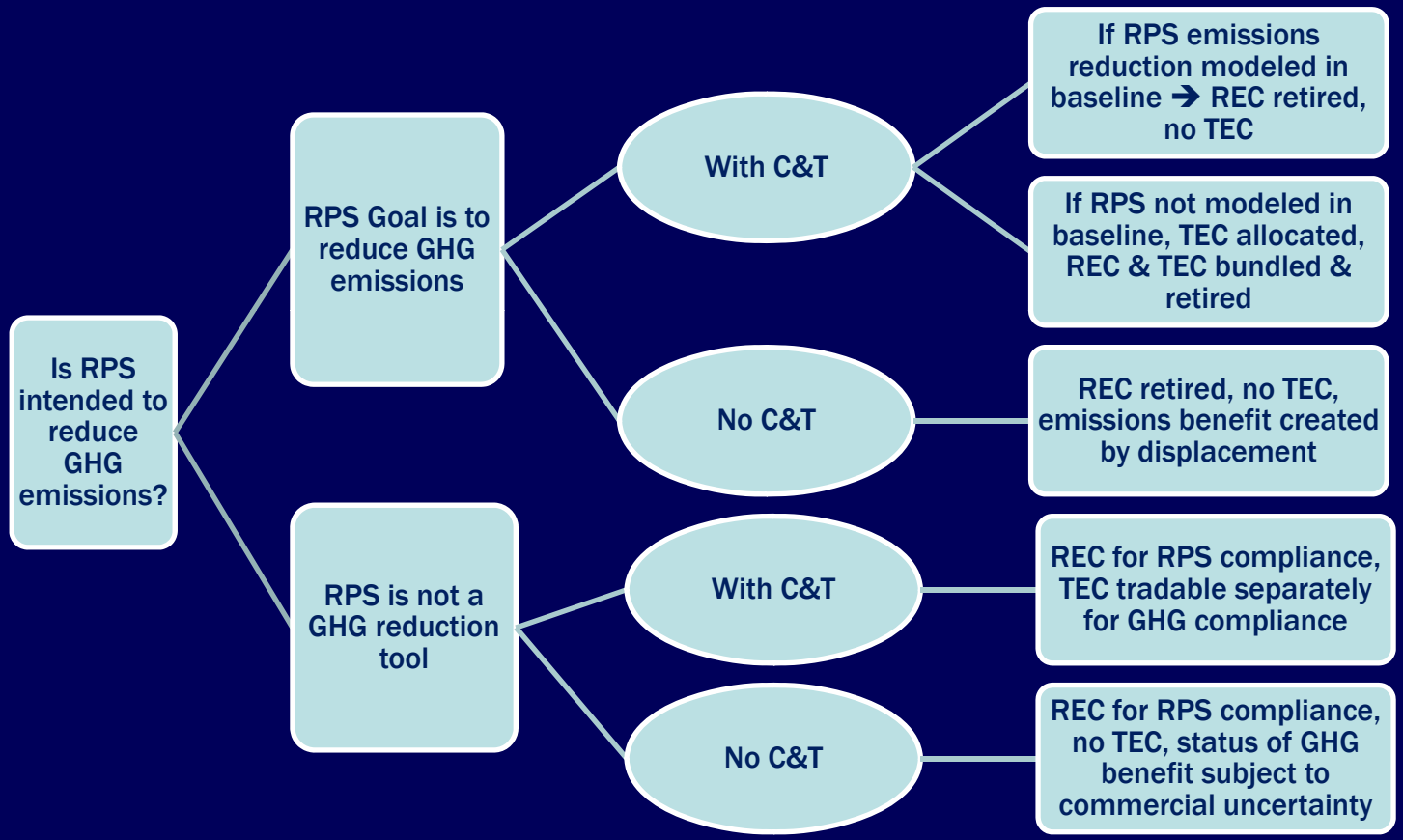
Approach	TEC locked to REC
Example	RPS in AZ, CA, CO, NY, WA
TECs Created?	TEC + REC locked together
How Wind Benefits	Single revenue stream
What Wind Claims	Wind reduces emissions

Today's Landscape: Summary

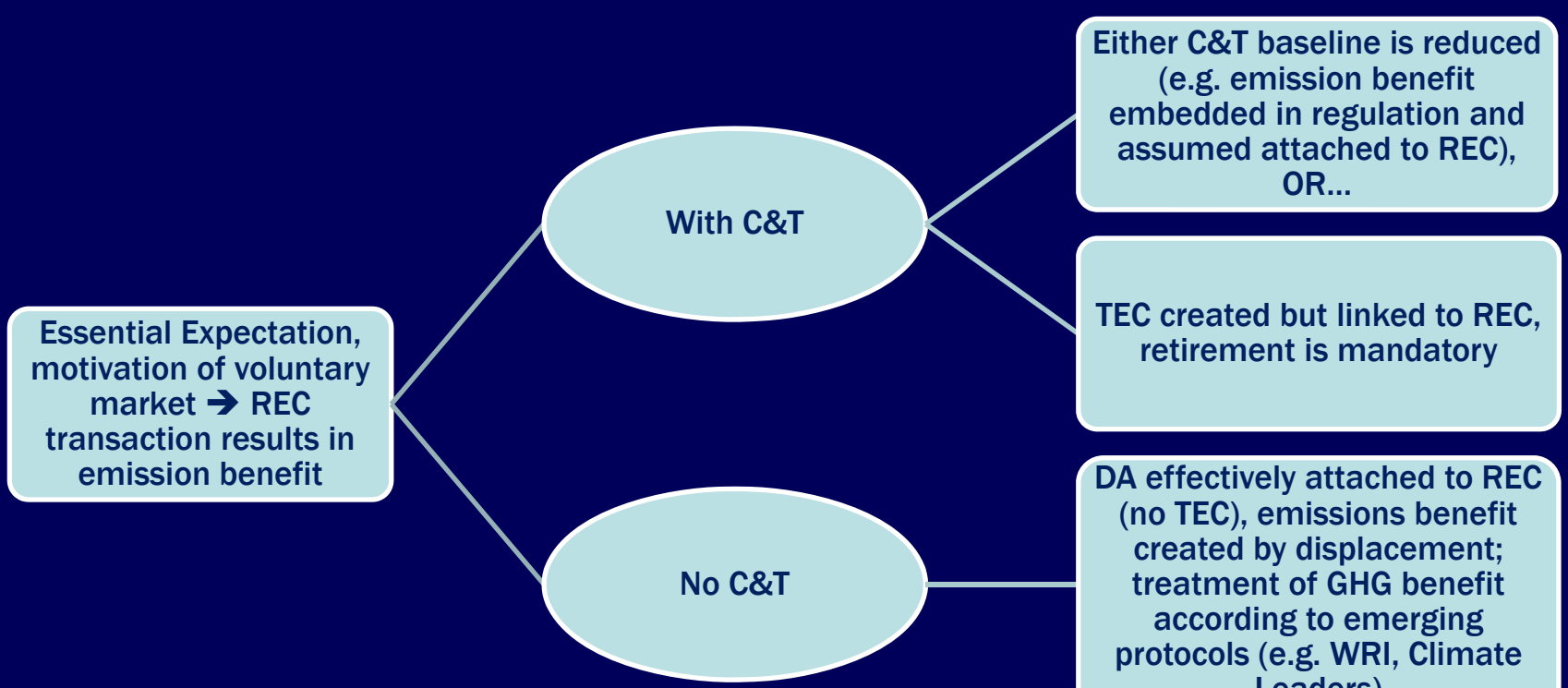


Approach	Example	TECs Created?	How Wind Benefits	What Wind Claims
Wind Before the Advent of C&Ts	Most states	No framework for treatment of Derived Attributes	Single revenue stream for REC; GHG benefit implied with REC	Wind reduces emissions (displacement)
C&T, cap NOT reduced by wind	Voluntary GP under RGGI unless optional GP clause adopted; Federal SO_2; NO_X w/o set-aside allowances	No	Higher value of wind production due to increased energy prices (No direct C&T revenue)	No clear emission reduction claim; lower total compliance cost
C&T, cap reduced by wind	RGGI treatment of pre-existing RPS targets (imprecise)	Reduce the Cap or # of Allowances	Higher value of wind production due to increased energy prices	Wind reduces emissions
Allows sale of TEC	RPS in DE, MA, MD, PA, RI; Allowances allocated to wind (e.g. set-asides)	TEC created, independent of REC	C&T allowances to Wind. TEC sale yields additional revenue	Wind may not reduce emissions, but lowers total C&T compliance cost
TEC locked to REC	RPS in AZ, CA, CO, NY, WA	TEC + REC locked together	Single revenue stream	Wind reduces emissions

What Should Happen?
Integrating RPS and GHG Policies



What Should Happen? Maintaining the Integrity of Voluntary "Green Power" Purchases



Conclusions

- Current definitions of RECs & attributes are often imprecise; the role of RECs in carbon/GHG policy is unclear. ➔ Result = Commercial uncertainty.
- Distinguishing 'primary' and 'derived' attributes is critical to effective policy design and commercial transactions. RECs carry the bundle of primary attributes; derived attributes (TECs) can be contractually attached to RECs but not inherently included.
- For market-based policies to function, policymakers need to clarify policy objectives and build policies accordingly.
- Wind advocates must work to ensure that GHG reduction policies include wind in their design, or benefits may not be recognized or realized.
- GHG policies may result in more $ for wind, but will not necessarily result in supplemental revenue for wind.

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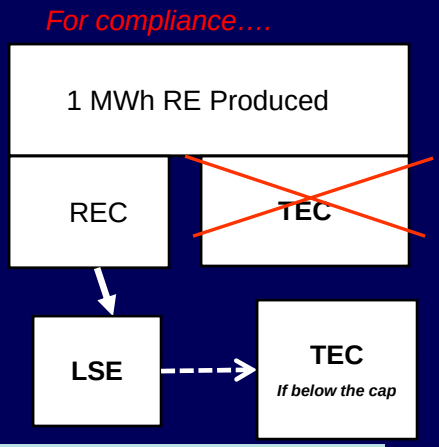
Appendix

- How does the California “load-based cap” approach fit with this framework?

Load-Based Cap: California's Future Approach

- Requirement applied to load serving entities (LSEs) rather than generator
- Focus on primary attributes (PA) rather than derived attributes (DA)
- A compliance purchase of RECs from wind creates space under cap for LSE
- LSE's "Excess" RE purchases can free-up a TEC
- Wind generator can decide to:
  - Either sell REC with DA bundled to LSE (for compliance) *or* as GP
  - Or sell TEC separately
- For Voluntary GP sales: need approach to reduce cap (e.g. like the RGGI voluntary option)



Implications:

- Compliance wind purchase reduces emissions attributed to buyer, but not overall capped emissions
- No TECs or direct C&T revenue for Wind
- No clear emission reduction claims with REC, but wind can claim "zero emission"
- Wind benefits because LSE willing to pay more for RECs (up to market price of allowance)